

Annual Quality Assurance Report



2008-09

Internal Quality Assurance Cell
College of Basic Sciences & Humanities
G.B. Pant University of Agriculture & Technology
Pantnagar 263 145 Uttarakhand

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Part A

Plan of action chalked out by the IQAC towards quality enhancement

- To update the curricula of the courses offered to students in various degree programmes with innovations in curricular design and transaction
- To cater the needs of the Inter-disciplinary and New programmes to be started by other departments
- To ensure that reforms have been implemented in the examination as per guidelines given time-to-time by the Registrar
- Establishment of SC/ST Cell for implementation of Government policies and roster as per guidelines and their Monitoring
- To emphasizing on capacity building
- Focus on Faculty Trainings and Competence Improvement
- Organizing national and international seminars, conferences, symposia and workshop as well as trainings to increase the potential in feasible skill development
- To maintain the deals recorded in MoUs, projects, and collaborative research
- To start extra classes for the students of SC/ST and weaker section
- Periodically reviews of the Internal Quality Assurance and finally in the end of the year
- Improvement as per Feedback from the students regarding the instruction imparted during each semester
- To update of the records related to complaints and redressal
- To ensure that college is a non-smoking and zero ragging zones.

Part B

Details in respect of the following:

1. Activities reflecting the goals and objectives of the institution:

The Mandates:

- Spreading scientific awareness among farmers and public in order to enhance productivity and efficiency.
- Providing latest scientific knowledge for socio-economic development and capacity-building.

The above mandates were established during the inception of the college, which have now been revised in the present scenario.

- Basic supporting courses to U.G. /P.G. Programmes of the University besides M. Sc. & Ph. D. programmes in pure & applied sciences.
- Research in frontline areas of basic & applied sciences with relevance to agriculture, allied sciences and engineering.
- Focused study of biodiversity, bio-resources, biotechnology and environment.
- Spreading scientific awareness among farmers and public.

The Mission:

- Inculcating scientific temperament among the students for progress of nation.
- Teaching and research in basic and applied sciences.
- To teach Basic courses at the UG and PG Programmes level to the students of different faculties and specializations besides M. Sc. & Ph. D. programmes in pure & applied sciences.
- Research in frontline areas of basic & applied sciences with relevance to agriculture, allied sciences and engineering ushering state-of-art techniques and technologies.

Goals and Objectives:

The knowledge gained from the basic research has to be used in the development of modern technologies so as to intensify the utilization of ever declining natural resources. Perfecting gene transfer, biological approaches to gene mapping, multiplication of elite species and varieties through biotechnological means, production of transgenic plants, biochemical and physiological basis for disease resistance and quality of food grains, dynamics of soil-water-plant interaction and crop modeling are some of the issues to be taken-up in the near future. The role of biotechnology, post-harvest management to increase shelf-life of perishable and non-perishable foods, recycling of waste, role of enzymes in food industry, tissue culture and pollen culture are some other important areas which need continuous attention of the basic science research. Some other important research strategies in basic sciences are presented below:

- Studies on application of molecular biological approaches for genome mapping for marker-assisted selection of various crops, in vitro DNA manipulation for specific

purposes of expression and transfer of genes in diverse biological system will be taken up. Modified gene constructs will be introduced into microbial and plant cell by transformation. Application of regulators to legume rhizosphere growth, biochemical aspects of host-pathogen relationship, screening of nutritive quality in agricultural crops, pesticidal hazard on pollinators, application of new compounds and their metal complexes for antibacterial, anti fungal, nematicidal and insecticidal properties, characterization of germplasm, molecular cytogenetics and genetic engineering, bio-safety concerns against transgenics, development of biofuels, and formulation of medicinal plant products against specific diseases like diabetes and parkinson's are the new thrust areas of basic research.

- Development of better strains of nitrogen-fixing organisms including symbiotic, asymbiotic and associative symbiotic microorganisms, development of diazotrophic strains able to perform well under adverse environmental conditions, microbial production of industrially useful products from agricultural raw materials, and the potential of micro-organisms for production of industrial enzymes, microbial polysaccharides and organic acids will be harnessed. Microbial processes for treatment of various types of industrial wastes will be attempted for pollution abatement and energy recovery.
- Emphasis will be laid on the study of physiology of abiotic stresses for identifying physiological, biochemical and molecular traits in crop plants which could be selected and cultivated under stress conditions. The work on nodulation and nitrogen fixation will be carried out in order to evolve biological means of providing nitrogen to crop plants by enhancing the active span of nodules.
- Physiological traits dealing with increased crop production, better nutrient, carbon and nitrogen-use efficiency and post-harvest physiology and natural plant resources are other areas which will require emphasis. Molecular mechanism of stress-induced male sterility in cereals, pollen biotechnology and propagation of various plants of medicinal use will be other important areas for priority action.

Future Goals and Objectives:

- To train the students with high through put techniques applicable in the area of agri-biotechnology and other bio-services, such as bio-energy, bio-fertilizer, bio-control etc.
- Conducting socio-economic and environmental impact assessment
- To enable students by imparting latest scientific notions and techniques
- Focused study of biodiversity, bio-resources, biotechnology and environment.

Short and long term plans for five years

Long term plan involves hi-tech research in applied sciences among others. Short term plan incorporates refinement of existing tool and techniques in addition to infrastructural development. Some of the specific areas of development are as follows:

- Perfecting gene transfer, biological approaches to gene mapping, multiplication of elite species and varieties through biotechnological means, production of transgenic

plants, biochemical and physiological basis for disease resistance and quality of food grain, dynamics of soil-water-plant interaction and crop modeling, post harvest management to increase shelf-life of perishable and non-perishable foods, recycling of waste, role of enzymes in food industry and tissue culture.

- More stress on physiology of abiotic stresses for identifying physiological, biochemical and molecular traits in crop plants cultivated under stress conditions.
- Work on nodulation and nitrogen fixation to evolve biological means of providing nitrogen to crop plants by enhancing the active span of nodules.
- Emphasis on physiological traits related to increased crop production, better nutrient, carbon and nitrogen use efficiency and post-harvest physiology, natural plant resources.
- Molecular mechanism of stress induced male sterility in cereals, pollen biotechnology and propagation of various plants of medical use especially nutraceuticals and pharmaceuticals.
- Studies on application of molecular biological approaches for genome mapping for marker assisted selection of various crops, in vitro DNA manipulation for specific purposes of expression and transfer of genes in diverse biological systems.
- Emphasis on commercial utilization of bio-technological techniques especially in mass multiplication of elite species.
- Application of regulators to legumes rhizosphere, growth biochemical aspects of host-pathogen relationship, screening of nutritive quality in agricultural crops, pesticidal hazard on pollinators, application of new compounds and their metal complexes for antibacterial, antifungal, nematicidal and insecticidal characterization of germplasm, molecular cytogenetics and genetic engineering.
- Increased use of bio-physical, radioisotopes and nuclear techniques to ensure major breakthrough in agriculture and allied sectors.
- Development of better strains of nitrogen fixing organisms including asymbiotic, symbiotic and associative symbiotic micro organisms, besides diazotrophic strains able to perform well under adverse environmental conditions.
- Realising the importance of rhizosphere biology in influence on the crop growth, research efforts on the biotic and abiotic interactions in rhizosphere and generating the technology better suited for sustainable agriculture.
- Developing a network of interdisciplinary approach to resolve different facets of rhizosphere research.
- Development/identifying the crop gene pool which could be more productive under different challenged situation using integrated crop management practices.
- Microbial production of industrially useful products from agricultural raw materials.
- Harnessing potential of microorganisms for production of industrial enzymes, microbial polysaccharides and organic acids.
- Initiating microbial processes for treatment of various types of industrial wastes for pollution abatement and energy recovery.
- Emphasis will be laid on application of tools and techniques developed in agriculture, biological and environmental science.

- Evolving strategies to secure adoption of organic and precision farming viably.
- Strategy in social science research towards generation of information and socio-economic impacts of innovative technologies, cost-benefit ratio of the farming systems, employment scenario, structural and related issues.
- Research emphasis on areas related to unemployment, poverty, illiteracy, environmental factors, health problems, rural migration, tribal marginalization, old age, changes in cropping pattern and land relations.

2. New academic programmes initiated (UG and PG)

Undergraduate Programmes:

B.Tech. Biotechnology in 2008-09

Post-graduate Programmes:

Nil

3. Innovations in curricular design and transaction

- Earn while learn programme implemented at UG level
- Concept of liberal education introduced
- National Service Scheme started at undergraduate level
- Graduate Research/Teaching assistantship at Master's level
- Scholarship to all Ph.D. students even not qualifying NET
- Twenty six new courses designed at undergraduate programme by Department of Molecular Biology and Genetic Engineering and 2 courses at Post-graduate level by Department of Microbiology.

4. Inter-disciplinary and New programmes started

Undergraduate Programmes:

Nil

Post-graduate Programmes:

Nil

5. Examination reforms implemented

- Computerization of online registration for auditing the courses
- At least two pre-finals examinations are essential for each course
- 85% of the attendance are mandatory in each course for final examination
- Measures are being adhere strictly to fulfill the criteria for the examination
- Result of each course-examination is submitted online and ensured at each level of administration
- At 10-point scale has been adopted in each course
- The academic calendar including examination dates for both semesters is approved by Academic Council in the beginning of the session

- The cell ensures the implementation of examination reforms issued by the office of the Registrar time to time.

6. Candidate qualified: NET/SLET/GATE etc.

- In the Department of MBGE: the number of students qualifying for CSIR-JRF: 13. CSIR-NET: 06. DBT- JRF: 07, GATE: 13.
- In the Department of Biological Sc. Virendra Kumar- NET(LS), Gokulanand & Manoj Kumar -GATE
- In the Department of Biochemistry: Nishad S., Id. No. 35551 qualified CSIR JRF (NET) in June 2008. Nishad S., Id. No. 35551 (97.1%), Rakhi Singh, Id. No. 353997 (92%), Madhu Rawat, Id. No. 35339 (85.36%), Pankaj Tamta, Id. No. 35404
- In the Department of Microbiology, the no. of students securing JRF, NET, Fellowships -1, NET-1, GATE-4.
- In the Department of Plant Physiology: Aradhana Kumari qualified C.S.I.R-UGC Joint test, Dipti Verma qualified A.S.R.B. NET, Dalbeer Kaur qualified A.S.R.B. NET, Ms. Anjani Yadav qualified A.S.R.B. NET, Ms Babita Patni qualified GATE, Mr. Ashish Sharma qualified GATE.
- In the Department of Environment Sc Ph.D. students Mr.Tirthankar Banerjee, Mr. Jas Pal Singh Chauhan, qualified for UGC/ARS NET Ms. Sweta Saraswat, Ms. Asha Pandey qualified for UGC NET.

7. Initiative towards faculty development programmes

To maintain capacity building and development, the faculty is being upgraded by their trainings and workshops. The staff is allowed to attend such development programmes organized at college-level as well as University level. The college also facilitates the faculty to depute them for attending National and International conferences and symposia etc. Besides all this the faculty also delivered a number of lectures invited in various programmes including research and other academic fields. They publish Bulletins and Lab-manuals in various schemes and courses. College also organizes talks and lectures besides faculty seminars by eminent scientists and researchers of the country as well as of international repute. A list faculty members who participated in such initiatives is given in **Annexure-I**.

8. Total Number of Seminars/ Workshops Conducted

- Department of Molecular Biology & Genetic Engineering organized two-days Sensitization workshop on “*Biosafety Issues related to Practicing Agricultural Biotechnology*” (Nov 3-4, 2008) with funds from State Biotechnology Programme, Haldi and International Service for the Acquisition of Agri-Biotechnology Applications, New Delhi. Dr Rajendra Dobhal, Director Uttarakhand State biotechnology programme and Dr. Ranjini Warriar, AD, of Ministry of Env. & Forests were Guests of Honor. Around 150 persons from North zone of India participated. The VC Dr. B. S. Bisht delivered inaugural speech.
- The centre sub-DIC in Bioinformatics has successfully conducted a DBT funded regional workshop on “*Protein structure Prediction and applications in Agriculture and Veterinary*” on Oct 12-14, 2008 attended by 44 participants from all over the

country. The participants were provided with both lectures and hands on training in use of Bioinformatics analysis packages.

- Department of Social Sciences & Humanities organized UGC Sponsored Sensitization, Awareness and Motivation (SAM) Workshop on “*Capacity Building of Women Managers in Higher Education*” on December 01-05, 2008, Coordinator Dr. B. J. Saini, Professor (English).

9. Research Projects

a. Ongoing

S. No.	Title of Project	PI/ Co PI	Funding Agency	Duration	Outlay (lac)
1.	Application of Microorganisms in Agriculture and Allied Sectors	Reeta Goel	NBAIM/ ICAR	2007-12	67.57
2.	<i>In silico</i> Characterization of cadmium and arsenic resistance potential genes and/ or proteins of microbial system	Reeta Goel	DBT	2008-11	21.49
3.	Fermentation of Apple-pomace for production of ethanol- acid	Manvika Sahgal	ICAR	AICRP Continued	0.50 per yr
4.	Sub-center of bacteria & archaea	Manvika Sahgal	MoEF	2005-Continue d	25.47
5.	Pesticide degradation using cultural and biological tools to minimize ground water pollution	Anjana Srivastava	Ministry of Env., Govt. of India	2007-10	18.41
6.	Isolation Identification and Synthesis of pheromones of Groundnut Bruchid, <i>Caryedon serratus</i>	Virendra Kumar	DBT Govt. of India	2007-10	9.92
7.	All India Coordinated Research Project on Weed Control	Shishir Tandon and S.K. Guru	ICAR	Long Term 1999-contd	
8.	Super Critical Carbondioxide Assisted Synthesis of Carbon Nanotube Epoxy Composites	M. G. H. Zaidi	DRDO Govt. of India	2008-11	39.89
9.	Processing of Antimicrobial Nanocomposites in Supercritical Carbon Dioxide	M. G. H. Zaidi	DBT Govt. of India	2008-11	36.07
10.	Processing of thermoresponsive magnetic nanoparticle in super critical carbon dioxide	M. G. H. Zaidi	UGC Govt. of India	2008-11	7.831
11.	Elucidation of biochemical mechanism(s) of fungal growth promotory substance(s) from wheat spikes for Karnal bunt (<i>Tilletia indica</i>) pathogen	Anil Kumar	DST project	2008 onwards	25.0

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12.	Chemical & molecular determinants of Aconitum balfourii Stapf. and ecoprofiling under micro/macro environment of root growth including transgenic roots for higher aconite content.	A.K. Gaur A. K. Pant	NMPB	2008-11	35.0
13.	Program Mode Support in Agriculture Biotechnology, Pantnagar	J. Kumar, Anil Kumar, A.K Gaur, Sandeep Arora, Gohar Taj, Dinesh Pandey	Dept of Biotechnology, GOI	2008-12	761.00
14.	Carbon Sequestration Studies and Capacity Building in Agricultural System of Central Himalayan Region of India	Uma Melkania	UCOST Dehradun	2008-11	
15.	Carbon Sequestration Studies in Forest and Agroecosystems along an altitudinal gradient.	Uma Melkania	DST, New Delhi	2009-12	
16.	Environmental Impacts Assessment Study of SIDCUL Integrated Industrial Estate-Pantnagar	R. K Srivastava	UCOST, Dehradun	2007-12	
17.	Demonstration of Municipal waste Management through application of fuel wood plantation sponsored by IIT, Delhi. Under V. K. International project.	R.K. Srivastava	IIT, Delhi	2008-10	
18.	All India Coordinated Rice Improvement Programme	Alok Shukla	ICAR	Long Term 2001-contd	

b. Completed

S. No.	Title of Project	PI/ Co PI	Funding Agency	Duration	Outlay (lac)
1.	Bacterial Gene Pool for Biodegradation of Polymers from Plastic waste	Reeta Goel	DBT	2005-2008	24.43

10. Patents generated

Dr. M. G. H. Zaidi has secured in 2009 a **patent** on “**Method of preparing a layered silicate reinforced epoxy through supercritical carbondioxide treatment**”. Indian Patent no.: IPR/4.13.13/07025/2007

11. New collaborative research programme

The University runs all the academic programmes through Advisor-advisee system. Every student is allotted an advisor at the time of admission. A course programme of each

student is approved by Dean of the college. The course programme is different for different students. There is provision of the basic supporting courses as well minor package besides the optional courses at Masters and Ph D levels. At the Post-graduation level, there is an advisory committee consisting of the members, who are expert in the field of the research and related topics. The research is done by each student in the supervision of experts, who are normally faculty of other departments in the University. Thus there is bridge over various colleges, departments and faculties to research in the projects too. As an example, the committee would like to quote proudly that the department of Molecular Biology and Genetic Engineering is running a mega research Program in Mode Support in Agriculture Biotechnology, Pantnagar. Thus, the concept of collaborative research programme is being run through project mode.

12. Research grants received form various agencies

The college runs various research projects with collaboration with various departments with administrative control under Directorate of Experiment Station and financial control through the Comptroller of the University. The grants received in various research projects as a total outlay have been shown above along with projects.

13. Details of Research scholars

The list of research scholars working in various departments of the college is given in the **Annexure-II**.

14. Citation index of faculty members and impact factor

The citation index of the faculty members and impact factor of publication for individual faculty member of the college are given in the **Annexure-III**.

15. Honors / Awards to the faculty

International

Nil

National

- Dr Dinesh Yadav Young Scientist Award under the discipline Biotechnology, Biochemistry and Microbiology by Uttarakhand Sate Science & Technology Congress held at IIT, Roorkee on 10-11th Nov. 2008
- Dr Sonu Ambwani Young Scientist Award under the discipline Biotechnology, Biochemistry and Microbiology by Uttarakhand Sate Science & Technology Congress held at IIT, Roorkee on 10-11th Nov. 2008
- The Indian Society of Geomatics Conferred second-Best paper presentation award to Dr. Uma Melkania at National conference Geomatica 2009 organized by Uttarakhand State Application Centre from February 4-6, 2009, at FRI, Dehradun.
- Dr. S. Agrawal was nominated as Convener, BSMAC on Basic Science Group by ICAR for restructuring Course curricula & Syllabi at PG level and submitted the report. (Jan 2008)

16. Internal resources generated

- There is a provision of the 15% money in each project for over head charges to run as University share. From this share, University transfers 40% to college where the project is running actually. This increases the internal resources through projects
- A new programme B Tech Biotech has been started in self-finance mode. Programme fee received from the students is retained in the college to increase the internal resources through teaching
- Summer trainings are being organized to outsiders by various departments of the college to increase the internal resources.

17. Details of departments getting SAP / COSIST (ASSIST) /DST (FIST etc)

The College does not have any Special Assistance Programme and other COSIST supported by UGC. One to two Departments have received the funds under FIST from Department of Science & Technology. Following Departments awarded Funds for Infrastructure in Science & Technology (FIST):

- Department of Microbiology
- Department of Chemistry
- Department of Environment Sciences
- Department of Biochemistry

18. Community services

Ample opportunities are available to the students to express their creative urge through literary, social and cultural activities and films; hobbies clubs; and NCC at hostel and University levels. There are 4 activity and 10 hobby clubs. Photography project, vegetable production project, literary and cultural project, Indian heritage and spiritual thought project, Indian and foreign languages project, arts and craft project, computer learning project, community development project, fashion/ dress designing project and tractor driving project also help in developing finer aspects of students' personality.

19. Teachers and Officer newly recruited

a. Teachers

Nil

b. Officers

Nil

20. Teaching - Non-teaching staff ratio

1:2

21. Improvement in the Library services

There is a concept of central library in the University. Besides developing its need based collections of printed texts, the library kept pace with IT oriented ways and means of dissemination scientific information. Its beautifully renovated and air conditioned documentation division is equipped with CD Network station, several CD based database, over a dozen personal computers and heavy duty printer for generating printouts of scientific literature required by students and faculty members Libsys software package is acquired recently to computerize in-house activities like issuance of books, production of catalogue cards, management of periodical subscription and acquisition of scientific and technical literature. Library is also using internet facility for optimistic exploitation of networked resources for advancement of learning.

Library service Committee is an apex body to advise the Librarian on policy matters pertaining to library, its development, improvement in its services and funding resources etc. Dean and Head of the Departments of College of Basic Sciences & Humanities are members.

Following Improvement has been observed:

- Library has received special grant under Institute of Excellence from ICAR.
- Rs 200 lac has been allotted for accessing e-content for in the campus users.
- The search facility of bibliographical databases was made available on CDROM to users for their literature search.
- Online journals access facilities of Springer, Annual Reviews, CSIRO through Consortium for e-Resources in Agriculture (CeRA) and IEEE, ASME, ASCE through INDEST have been provided to the users.
- Information services from J-Gate and union catalogue of DELNET are provided to users.
- e-Thesis submitted by students in Ph.D. and Master degree programme are managed through digital repository.
- Library is providing information service of Indian standards in full text on electronic mode.
- Users were trained to use the digital resources for extracting information from bibliographical databases, full text journals and other e-resources.
- Bibliographical records of library documents are computerized and are available on web under CaPAC' which are linked with the home page of the library.

22. New books/ Journals subscribed and their cost

Total Collection:	386075
1. Number of users consulted the library:	26203
2. Number of publications consulted:	373985
a. Books:	165437
b. Current periodicals:	72308
c. Bound volumes of periodicals:	136240

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3.	Number of publications issued:	38195
4.	Number of publications classified:	3308
5.	Number of publications catalogued:	
	a. New titles:	2611
	b. Add copies:	5921
	c. Catalogue cards prepared:	8532
6.	Number of bibliographical references CD-ROM databases printouts:	33483
7.	Number of documents procured:	9349
8.	Number of periodicals procured	448

23. Courses in which student assessment of teachers is introduced and the action taken on student feedback

The College of Basic Sciences & Humanities consists of ten departments. Out of them, nine departments are running Masters and Ph D programmes in their respective disciplines. This year the college also started a 4-year Under-graduate programme in B Tech Bio-technology.

All the departments of the college offer the courses to run all under-graduate and post-graduate programmes of the University. In the end of every semester, a feedback form is given in the each course by a committee constituted for this purpose with notice of the instructor. The feedback is analyzed by the Department of Mathematics, Statistics and Computer Science confidentially. Finally, Dean of the college approaches to instructor concerned on the basis of the analysis not on raw feedback form. Thus, process of improvement of finalized.

24. Feedback from stakeholders

The stakeholders of the college are students. The students study in Advisor-advisee system. When their degree is completed, i.e., in the end of semester, the advisor gets feedback. If any improvement is required, the matter is brought in the notice of the Dean and finally for open discussion to Board of Faculty for its proper approval. However, it would be worth while to mention that being imparting higher education in professional degree courses, there is no and fix feedback.

25. Unit cost of Education

The college of Basic Sciences & Humanities is a constituent college of the University. The teaching, research and extension are the integral part as mandate. Being residential and on the basis of land grant pattern University, there is no concept of income and expenditure for teaching separately. Therefore, unit cost of education can not be calculated as such. It

would be worth while to mention that fiscal fitness is maintained as per state government rules and regulations by a separate division, which is headed by state government finance officer.

26. Computerization of administration and the process of admissions and examination results, issue of certificates

Admission criteria and entrance examination

1. Admission to the University implies acceptance without any modification by the candidate and his/her parents/guardians of all provisions given in the University act, statutes, regulations and admission policy and changes that are made from time to time therein.
2. The students who have been temporarily dismissed or permanently dropped from the University either on account of poor academic performance or on account of acts of indiscipline or those who have been debarred from seeking admission to any programme of this University are not entitled to seek admission in the University.
3. If any document submitted by the candidate is found to be false at any stage during his/her stay in the University, his/her admission will be cancelled.
4. The information indicated in the prospectus published every year are only for general guidance and could be modified/changed from time to time by the board of management/ academic council of the University.
5. All admissions shall be made strictly on merit as determined on the basis of marks obtained by the candidates in the Entrance Examination to be conducted by University, except the following:
 - (a) Admissions to B.Tech. Programmes shall be made by the University on the basis of merit of AIEEE Examination.
 - (b) Admissions to Master's programme in Molecular Biology and Biotechnology offered by College of Basic Sciences & Humanities shall be made through the entrance examination conducted by J.N.U., New Delhi.
 - (c) Candidates other than Bonafide residents of Uttarakhand are not eligible to seek admission directly to the Undergraduate and Masters' degree programmes in the University. However, they can apply to the Indian Council of Agricultural Research, New Delhi/Veterinary Council of India, New Delhi. They will have to submit a separate application as and when called by ICAR/VCI, New Delhi and take All India Competitive Examinations and attend counseling at New Delhi for seat allotment.

Time of Admission

Admissions to all Under-graduate and Masters' degree programmes except for Sponsored or Fellowship holders in various postgraduate degree programmes shall be made in the I Semester of the ensuing academic year only. However, admissions to Ph.D. degree programmes shall be made in first as well as in second semester (provided seats remain vacant in the first semester).

Examination fee & last date for submission of application

The Last date for sale of application form and Prospectus at Post Offices and at Admission Cell, submission of completed application forms along with examination fee are published every year through News papers and University website www.gbpuat.ac.in.

Admission of Sponsored/ Nominated Candidates

- (a) The candidate(s) sponsored/nominated by the I.C.A.R./ Govt. of India / State Govt./ Indian Universities shall not be required to appear in the Entrance Examination. His/her admission shall be governed by the eligibility requirements, as prescribed in the admission brochure.
- (b) The last date for the receipt of application of the sponsored candidate(s) and UGC/ ICAR/ CSIR/ DBT fellowship holders shall be one month before the beginning of the Semester/ Session in which admission is sought.

No. of Seats & Eligibility Qualification

The eligibility and qualification for each programme is separately given in the Admission Brochure. The numbers of seats may be changed every year as per need and available diversified resources.

Reservations

(a) Vertical Reservations

(i) The vertical reservation for the academic year will be as under:

- (i) OBC - 14%
- (ii) Scheduled Caste - 19%
- (iii) Scheduled Tribes - 04%

(ii) The seats not filled through candidates of reserved categories shall be converted to General Category seats and filled up accordingly. The conversion of seats in Ph.D. programmes only shall be made during the counseling in the II Semester upon vacancy

(b) Horizontal Reservations: Out of reservation applicable to different categories, the horizontal reservation in these categories shall be as under:

(i)	Children of retired/killed or disabled Defence Personnel of Uttarakhand	2 %
(ii)	Children of Freedom Fighters of Uttarakhand	2 %
(iii)	Physically Handicapped of Uttarakhand having disability 40% or above	3 %
(iv)	*Women Candidates of Uttarakhand	30 %

* Women Candidates of Uttarakhand shall include girl candidates also

(c) The candidates who have obtained qualifying degree from G.B.P.U.A. & T., Pantnagar shall be treated at par with the Bonafide residents of Uttarakhand for higher studies.

(d) Over and above the sanctioned seats, admission to the following sub-categories in Undergraduate programmes (except B. Tech.) shall be available as follows:

- i. Children/Spouse of regular employees of G.B.P.U.A.&T., Pantnagar
5% seats in each programme
- ii. ICAR Nominee
10% for Foreign Nationals who pay an Institutional Fee US\$ 4000 per annum besides other fee.
- iii. The son/ daughter/ spouse of the regular University employee who died in harness and whose establishment was with the G. B. Pant University shall be given special consideration for admission in the first-degree programme on compassionate grounds. His/her admission will be subject to that:
 - He/She secures at least marks up to cutoff point for admissions of the particular year and qualifies in General Category,
 - He/She fulfills the minimum eligibility qualification for the programme, and
 - 2% of the sanctioned seats in each programme subject to a minimum of one seat in each programme purely based on merit rank in the entrance examination.
 - His/Her admission is approved by the Vice-Chancellor.

Note: (i) The University reserve the right to change the reservation pattern either on account of Govt. orders or on its own.

Mode of Admission

(a) Subjects & Scheme of Examination

- (i) All candidates seeking admission to Ph.D. Programmes shall take subject matter test comprising 600 marks, which shall be administered programme wise.
- (ii) All candidates seeking admission to Masters' programmes shall take (i) Aptitude Test and (ii) Subject Matter Test as per scheme and mode.
- (iii) There shall be one common Entrance Examination for admission to all Undergraduate Programmes. It shall be of three hours duration and shall consist of one question paper and would be of objective type with multiple choices. The bilingual question paper in English and Hindi will be supplied.

(b) Basis of Selection for Admission

- (i) The Admissions Committee will decide the cutoff marks for qualifying the entrance examination after declaration of results of the Entrance Examination conducted by the University.
- (ii) For Ph.D. Programmes if the marks secured by two or more candidates are the same, the merit shall be decided on the basis of marks secured in the qualifying examination. For Masters' programmes in the event of two or more candidates securing equal marks the merit shall be decided on the basis of marks secured in the Aptitude Test and then qualifying examination. For Undergraduate programmes in the event of two or more candidates securing equal marks, the merit shall be decided on the basis of marks secured in Mental Agility then Physics, Chemistry and thereafter in the qualifying examination. In the event of tie again, a candidate with higher in age would be rated higher in merit.

(c) Counseling

- (i) All the qualified candidates, as per merit, shall be called for counseling on a specified date and time for consideration for admission to various Undergraduate, Masters' and Ph.D. programmes. The counseling will continue till the last seat in each programme is filled-up. The candidate will be informed by registered post at his/her mailing address given on the self-addressed envelope provided by the candidate. The University will not be responsible for non-delivery/late delivery of letter.
- (ii) No letter, fax or telegram enquiring about the result of the Entrance Examination will be entertained.
- (iii) The candidates will have to report at the counseling place as per schedule given in counseling letter for checking of relevant documents and depositing prescribed fee. Those candidates who do not turn up at their call will be given a chance at the end of the day. They can claim only the programmes/majors in which seats are available at that time and as per their qualifications/groups.
- (iv) The candidates coming for personal appearance should bring along with them the required documents for checking and depositing before counseling, such as, attested photocopies of High School Certificate and Marks-sheet, Intermediate Certificate and Marks-sheet and Certificate of any other higher degree qualifications that he/she may possess along with the originals; Domicile Certificate of Uttarakhand State Rural/Sports/Agriculturists weightage Certificate, Character and Conduct Certificate in original from the Head of the Institution last attended. Five-passport size photographs and other relevant documents.

Academic regulations

The Academic Council of the University frames appropriate academic regulations after the respective Boards of Faculties have deliberated and recommended the same. The academic regulations are compiled by the Registrar's office and updated from time to time incorporating the amendments. The Academic Council can also take up issues for discussion on its own and frame regulations.

The academic regulations pertain to the conduct of meetings of the Board of Management and Academic Council, admission, enrolment and continuance and discontinuance of students, conduct of examinations, award of degrees, and courses of study for degrees and diplomas, award of merit scholarship, award of bursaries, graduate assistantships, tuition free ship, award of fellowship/ scholarship by outside agencies, award of sports scholarship, award of medals (gold, silver and bronze), issuance of documents to the students, and merit certificates, convocation, award of degree in absentia, maintenance of students records and constitution of committees on student discipline, education policy and Library.

Curricula development and revision process

The University established in the year 1960 adopted the trimester system of education. Since then it organized the course-curricula for different UG and PG programmes to suit the requirements of its education. The University changed over to the semester system of education in 1985-86 and the course curricula were modified /updated accordingly.

The University statutes provide for the constitution of a Board in each faculty. The Board of Faculty is represented by the Heads of Departments and faculty members. Each Board acting as a recommendatory body develops department-wise course curricula to meet the degree requirements.

The curriculum developed by each faculty is placed before the Academic Council the highest policy making body, for approval.

Graduation requirements and curricula

The Academic Council is the apex body of the University which is charged with the responsibility of approving graduation (course) requirements of undergraduate students being admitted to the University. Any change/ modification/ addition/ deletion of course(s) from the graduation requirements of students is authorized only by the Academic Council. A new programme of undergraduate and post-graduate study is approved only after the needs objectives of the programme and courses and course contents are critically examined by the concerned faculty and the Academic Council. The contents of courses are developed in respect of lecture schedule, theory and practical distribution of contact hours, credit load and text and reference books by the concerned Department(s) in the light of the recommendation of ICAR, VCI, UGC and AICTE. The catalogue of the course(s) is updated periodically to impart basic applied and real time information to the students.

Adoption of standard model curricula

The University is sensitive to the quality of its products i.e. the students. Regular and meticulous monitoring of the academic programmes to ensure effective delivery is the unique feature of the University. Utmost care is taken to revise the curricula for the inclusion of new knowledge and exclusion of obsolete information. The recommendations of the central agencies incorporated. Some of the faculties have introduced the concept of pedagogy/Teaching Coordination Committees, which ensure effective implementation of educational policies, meticulous monitoring of teaching programmes and redressal of teaching related problems. The responsibilities of the Committees are:

- To ensure coordination of the teaching programmes
- To prepare the schedule for pre-final examinations
- To address the difficulties and ensure smooth conduct of teaching schedule
- To ensure coordination among the teachers and departments involved in teaching
- To ensure timely distribution of the answer books of the pre-final examinations to the students and removal of their difficulties

Evaluation and grading

The policy of the periodic evaluation of student's academic performance throughout the semester has been adopted by the University since 1960. It aims at monitoring the academic achievements of students. The details of evaluation and grading are given below:

- **Undergraduate degree programme**

The examinations are conducted internally in all the B.Tech. and B.Sc. Horticulture programmes in both the semesters. In the College of Veterinary and Animal Sciences, College of Home Science, College of Agriculture and College of Fisheries, the evaluation has an external component (50% of marks are allotted for the external examination).

The examinations in internal system are of the following types:

- i. Pre-final examination
 - a) Hourly examination (2) 40%
 - b) Practical examination 20%
- ii. Semester final examination 40%

The examinations in external system are:

- i. Pre-final examination
 - a) Hourly examination (2) 15%
 - b) Practical examination 20%

ii. Semester final examination 50%

At least two pre-final examinations are held in each course. The first pre-final examination is held during the 6th - 7th week and the second pre-final examination in the 12th -13th week of the semester.

- **Preparation of final examination result**

Each instructor prepares the result pertaining to the academic performance of the students in his course. A student securing marks below 50% is declared fail in that course. At the end of each semester the Grade Point Average of the student in each course is calculated. For determining the semester grade point of a student the total number of points thus obtained is divided by the total number of credit hours offered by the student in the semester. The students earn their degrees/ divisions on the basis of their Over All Grade Point Average (OGPA) on a 10 point scale.

- **Post-Graduate degree programme**

The Dean Post-Graduate Studies coordinates all the Post-Graduate programmes of the University. He appoints an advisory committee for each Post-Graduate student on the recommendation of the Head of the Department and the Dean of the college concerned.

- **Requirements for the Master's and Ph.D. Degree**

A minimum of 50 semester credit hours are required for M.Sc. degree out of which 20 credits may be carried by the research and thesis work. The minimum requirements of the course work in Ph.D. is 40 semester hours made up of one major and one minor. The Ph.D. major should carry at least 20 credits. The minimum requirement for thesis work for Ph.D. is 40 credit hours. The total requirement of the postgraduate degree is of the composition of the core and basic supporting and open elective courses shall be as follows:

	Master Degree	Ph.D. Degree
(a) Core and basic supporting courses	2/3	1/2

(b) Open elective courses	1/3	1/2
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The core and basic supporting courses in major are compulsory for all post-graduates students. The pre-final and semester final examinations are as in case of all UG programmes. A candidate for Ph.D. degree is required to pass the following preliminary examinations before he submits his thesis.

- Written preliminary examination (major and minor)
- Oral preliminary examination

All students admitted to the Master's and Ph.D. programmes are required to submit a thesis towards partial fulfillment to the degree programme.

27. Increase in infrastructural facilities

The infrastructure is constructed under the supervision of Director Works and Plants of the University as per policy. The new and increase in infrastructural facilities in various

departments have been completed as per X plan. However, it is to mention that following new infrastructural facilities have been developed at college level:

- The two-storey new Biotechnology wing has been made functional with state-of-art research labs and modern ambience for staff and students.
- A new real time -PCR, and a Low Temperature Incubator Shaker have been acquired by the Department of Microbiology.
- Nearly all the classrooms have been equipped with the facility of LCD projector to facilitate computer-aided instruction and interactive learning.
- DST-FIST sponsored facility developed in the Department of Environment Science for instrumentation, computation facility and library.
- Following new laboratories have been started:
 - Root Organ Culture Laboratory
 - Environmental Analysis Laboratory

28. Technological Up-gradation

A list of equipment purchased during the year has increased the technological grade of the academics of the college. A list of such equipment has been given in the Annexure-IV. The cell is putting only fifteen equipments purchased by the eminent faculty from the International Market in the Annexure-IV.

29. Computer and internet access and training to teachers and students

Information and Communication Technology (ICT) competency of college teachers showed that the college ICT capacity perceived by teachers in terms of availability, use and ease of access to ICT resources were of medium level. Majority of the teachers used almost all ICT application such as mobile phone, followed by e-mail, internet, word processing, file navigation, presentation, spreadsheet, scanner, LCD, digital cameras and video cameras. ICT integration within teaching learning was found to be of medium level. Training on ICTs, LCD equipped classroom, well developed lesson plan, orientation about modern technologies and ease of access to ICT resources for teaching allowed the use of ICT in teaching learning. ICT based training with strong support for improving ICT based infrastructure with technical support has improved ICT competency of teachers. College provides computers, free internet and e-mail facilities to the student. The intranet exists in each class room, laboratory, seminar room and faculty room as well as offices. This access is maintained by central computing facility at University level. Training on computers for teachers is a regular feature under computer literacy programme of the college.

30. Financial aid to student

Financial Aid/Bursaries/Scholarships

(i) Ph.D. Programmes: Two University fellowships are awarded @3000/- per month on the basis of merit out of eligible students admitted in a major (discipline) for a period of 36 months. However, in case of sanctioned fellowships in a department remain unutilized due to non-availability of students in the major, same fellowship may be transferred to the students of other Majors.

(ii) Masters' Programmes: Master's degree students up to 50% of the total admission in respect of each Major are awarded fellowship, Graduate Research/Teaching assistantship as per regulation on the subject. However, the value of fellowship will be of Rs. 2000/- per month for the student who stands first in the merit and for the rest the value of assistantship shall be Rs.900/- per month in each degree programme. GATE fellowships are provided to GATE qualified M.Tech. students for a period of 24 months.

(iii) Exemption in tuition fee: The Exemption in tuition fee is awarded to sons/daughters/spouses of regular employees of the University in tuition fee to the extent as existing in the year 2003-2004.

(iv) Undergraduate Programmes: Following are the details of financial assistance provided by the University to the first-degree students:

Sl	Name	Value	Remarks
1.	University Merit Scholarship	Rs. 800/- per month	Awarded to the best three students in each degree programme in each batch.
2.	Bursary Scholarship	Rs. 600/- per month	Awarded to 6% students of the total number of students admitted to each programme on the basis of merit at the end of I Semester subject to income restrictions. At present it is Rs. One Lac per annum.
3.	Bursary Scholarship for Home Sc. College	Rs. 600/- per month	Awarded to 25% of the students admitted to Home Science College on the basis of merit at the end of I Semester, subject to income restrictions i.e. Rs. One Lac per annum.
4.	Free ship in Tuition fee		Awarded to 25% undergraduate students on rolls of the University on the basis of merit-cum-means.
5.	Sports Scholarship	Rs.800/- per month	Awarded to the best five all round sportsmen and sports women.

In addition, following scholarships and financial assistance are available from outside

1. Merit-cum-Means Scholarship (ICAR).
2. Backward Class Scholarship.
3. S.C. and S.T. Scholarship.
4. Scholarship for State Nominees of different States.
5. P.P.I.C. Gurgaon.
6. Scholarship under Colombo Programmes.
7. National Talent Scholarship (ICAR)
8. ICAR Sr./Jr. Fellowship.
9. UGC Sr./Jr. Fellowship.
10. CSIR Sr./Jr. Fellowship.
11. B.A.R.C. Fellowship.
12. Fellowship from M/S Aspee Agril. Foundation.
13. Indian Oil Scholarship.
14. ONGC Scholarship.
15. NCERT Scholarship.
16. Shamji Memorial Trust Scholarship.
17. Uttarakhand Krishi Utpadan Mandi Parishad Scholarship

18. S.J. Jindal Trust Scholarship
19. Major H.S. Sandhu Scholarship.
20. Mata Raj Karni Scholarship for Scheduled/ Backward Castes.
21. I.C.A.R. Scholarships for Foreign Students under various cultural exchange programmes.
22. Mahendra Hybrid Seeds, Jalna.
23. Mrs. Rila Paliwal Scholarship.
24. Dr. R.L. Paliwal Scholarship
25. Indian Herbs Scholarship.
26. Century Pulp and Paper Mills Scholarship.
27. Monsanto Scholarship
28. Smt. Chandrmukhi Memorial Scholarship.
29. Sh. Satguru Dayanand Memorial Scholarship
30. Smt. Uma Gupta Fellowship
31. Him Jyoti Foundation Trust
32. U.P. Alp Sankhyak Vittiya Avan Vikas Nigam Scholarship.
33. S.K. Mukherjee Scholarship.
34. AICTE Fellowship
35. MNES Fellowship
36. Priyank Pathak Scholarship
37. Bharti Scholarship
38. Amit Gautam Scholarship/Award

31. Activities and Support from Alumni Association

There is no undergraduate programme in the past run by the college. Therefore, the need of Alumni Association was not felt at college level. However the college students were tagged to University Alumni Association. The annual meet is normally held at University level. As such as this year college started undergraduate programme, hence the initiations have been taken.

32. Activities and Support from the parent - teacher Association

No such association exists at present. To establish such linkage at college level, steps have been framed out to formulize meetings with students' parents. Though, the student progress is send to parents by advisor in every semester through post.

33. Health Services

Medical Health Services

(a) **Outdoor ward facilities:** The University hospital has following outdoor facilities:

- | | |
|-----------------------------|----------------|
| 1. General Medical Officers | 2. ENT Surgeon |
| 3. Dental Surgeon | 4. Eye Surgeon |

5. **Lady Medical Officer**
 7. **Orthopedic Surgeon (Monday Only)**

6. **Physician (Monday Only)**

(b) **Indoor ward facilities:** The University hospital has indoor facilities on the male as well as female wings where the University students are kept under observation for a short period. Those needing prolonged hospitalization are referred and shifted to Sushila Tewari Hospital, Haldwani (Nainital) for needful treatment as per University rules. Emergency services are available round the clock.

(c) **Investigation facilities:** The facility of limited pathological investigation as well as Plain X-ray is available at the University hospital/College of Veterinary and Animal Sciences.

(d) **Ambulance facilities:** Facility of an ambulance is also available for transportation of seriously ill students from their hostel to the Hospital and on the request of Warden concerned for transportation to an outside hospital, if necessary.

(e) **Prophylactic Measures:** Immunization and vaccinations are performed every Wednesday and Friday.

34. Performance in sports activities

The department of Student Welfare provides ample scope, opportunities and facilities for the overall development of personality and leadership qualities of the students. Special stress, however, is laid on discipline, besides higher standard of academic performance. Students participate effectively in the management of hostels, food services, games & sports, cultural and literary activities. Professional societies for each college are under the guidance of Staff Counselor. It coordinates and provides facilities, activities and services as under: -

Extra-Curricular Activities

Extra-Curricular activities such as literary, cultural, social, film, hobbies and N.C.C. etc. are organized at University level and also college wise through 11 professional societies besides hostel level activities. A good infra-structure including a 900 seated University auditorium, two mini auditoria, college halls, musical instruments, double film projector and audio-visual aids are available for the organization of various debates, elocutions, arts and crafts, music, dance, folk songs and drama events besides other personality development professional competitions and contests.

Games and Sports

Games and sports activities are organized through 17 games & sports clubs. There are separate games and sports staff counselors for boys and girls. The University provides sufficient games and sports material to all the hostels as well as University level teams. Sufficient number of hostel wise and central play grounds in addition to full fledged stadium, adequately equipped gymnasium, physical fitness centre and a swimming pool exists for athletic as well as sports and games events.

35. Incentives to outstanding sports person

A weightage of 2 percent of the marks obtained in the Entrance Examination shall be given to the sports men/women candidates. This weightage shall, however be given only to

those sports men/women candidates who have played at the Inter-varsity/ State level (Junior /Senior level) as the case may be or above these levels, as evidenced by the certificate issued by these bodies.

36. Student achievements and awards

Ms. Shefali Dobhal, a PhD. Scholar in biochemistry under the guidance of Dr. S. Agrawal was awarded with Best Poster Award in III Uttarakhand Science & Technology Congress at IIT Roorkee, Nov 10-11, 2008

37. Activities of the Guidance and Counseling Cell

The University imparts job-oriented professional education in the field of Agriculture, Animal Science, Veterinary Science, Home Science, Forestry, Fisheries, Engineering, Management and Basic Sciences. The duty of the University towards its students does not end here, but also includes finding suitable employment for its alumni, so that their training and abilities are used for the benefit of the nation. In order to achieve this object the University has setup a full-fledged Directorate of Placement and Counseling, which is a unique feature of the University.

38. Placement services provided to students

Placement of Students:

1. Dr. Pankaj Joshi in PDF at ICGEB, New Delhi
2. Dr. Manisha Shah as Lecturer in Dolfon Institute, Dehradun
3. Mr. B.S. Tewari - Lecturer, Engg. College,
4. Mr. Jeewan Chandra- Lecturer, Engg. College
5. Kailash Pandey- Lecturer, Galgotia Engg. College, Noida
6. Employment of MBGE students: Bank Placement-03. Industrial Placement -02
7. In the Department of Microbiology, Employment/ Placement: 05

39. Development programmes for non-teaching staff

The college supports to non-teaching staff for enhancing their qualification by providing them study leave for higher degrees. There exists a separate reservation policy for staff candidates. Computer literacy programmes is being run periodically for non-teaching staff.

40. Good practices of the institution

We Support Government Policies

- RTI, Citizen Charter and e-governance
- Coaching classes for students of SC/ST/ Weaker section

- High Altitude Hill Agriculture Development with Indian Army
- Krishav Mahotsav programme of state government
- Community Radio Station for technology transfer directly to farmers and other stakeholders through broadcasting.
- Transparency in all administrative decisions and project them globally through website.
- SC/ST Cell and Women Empowerment Cell
- Complaint Box and Suggestion Box in the college premise
- Early redressal of students grievances due to advisor-advisory system

41. Linkages developed with National / International, academic /research bodies

Collaborative programmes and inter-disciplinary approach to teaching

The University has collaboration with many national and international institutions. The Indian Veterinary Research Institute, Izatnagar (Bareilly), Indian Agriculture Research Institute (IARI), New Delhi, National Dairy Research Institute (NDRI), Karnal, Central Avian Research Institute (CARI), Izatnagar, Institute of Forestry Genetics & Tree Breeding, Coimbatore, Indian Grassland and Fodder Research Institute, Jhansi, Central Food Technology Research Institute, Mysore, International Crop Institute for the Semi-Arid Tropics (ICRISAT), Hyderabad, Himachal Pradesh Krishi Vishwavidyalaya, Palampur, all the IITs, Tata Institute of Fundamental Research, Bombay, Palampur, Indian Institute of Science, Bangalore, Snow and Avalanche Study Establishment (SASE)/Defence Research & Development Organization (DRDO), Regional Engineering College, Kurukshetra, and International Rice Research Institute (IRRI), Manila, Philippines, are recognized for collaborative and interdisciplinary programmes. Memoranda of understanding are developed with outside agencies to strengthen teaching, research and extension programmes.

Collaboration with industry and other organization

1. Dr. R.K. Srivastava, Asstt. Professor, Department of Environmental Sciences has very close link with SIDCUL Pantnagar industries for providing need based services for their environmental management. Recently Dr. Srivastava has provided consultancy services to M/s Tata Motors for their Hazardous/solid waste management and prepared third part audit report. At present Dr. Srivastava is also working as Principal Investigator for "Environmental Impact Assessment study of SIDCUL-Integrated Industrial Estate-Pantnagar" funded by Uttarakhand Council for Science and Technology (UCOST), Dehradun.
2. Establishment of a Nodal Centre in the Department for conducting workshops/ training programmes in Mathematics & Statistics supported by Uttarakhand Council of Science & Technology.
3. Established a Centre in the Department for Mathematics Training & Talent Search (MTTS) programme in collaboration with National Board of Higher Mathematics (NBHM) Department of Atomic Energy, G.O.I.

MoUs :

- 2004 CIMAP, Lucknow Collaborative Research Programme from 11.08.2004 for ten years
- 2004 VPKAS, Almora Collaborative Research Programme from 02.09.2004 for five years

- 2006 University of Manitoba, Canada Educational and academic exchanges for mutual benefit of both organizations from 13.02.2006 to Continued
- 2006 University of New England Australia Furthering cooperation through both educational and academic exchange from 08.05.2006 to Continued
- 2006 GBPI Himalyan Environment & Development, Almora Collaborative Research Programme from 17.05.2006 for five years
- 2006 Cornell University, USA Facilitate international academic exchange to develop academic and Scientific relationship and in support of collaborative research activities from 20.12.2006 to Continued
- 2007 The Regents of the University of California, USA Agreement of cooperation from 20.06.2007 to Continued
- 2007 Institute of International Agricultural at Michigan State University, USA World Technology Access Programme from 16.05.2007 to Continued
- 2008 University of Arkansas, Fort Smith, USA Promotion of educational and academic exchanges between the two institutes from 24.10.2008 to Continued

42. Action taken report on the AQAR of the previous year

Not applicable

43. Any other relevant information

NCBI Gene Bank submissions:

- The Department of MBGE submitted more than 75 gene accessions of Cystatin gene families, Fungal MAP Kinases, Dof domains and genes, EF hand containing calcium binding and seed storage protein and stress responsive genes.
- The Department of Microbiology has submitted over 66 gene accessions of unculturable Csp, 16sr RNA, and mf gene community

Part C

Outcomes achieved by the end of the year 2008-09

- Presently, college was not running any undergraduate programme. In this year measures were taken to start with an undergraduate programme.
- A new programme B Tech in Bio-technology was approved by state government to run in self-finance mode. Hence, this was started from batch 2008-09. The admissions were made through AIEEE.
- Focused study of biodiversity, bio-resources, biotechnology and environment to fulfill the mandate.
- The mission was to teaching and research in basic and applied sciences. The academic session was started and completed in time.
- The students were train with high through put techniques applicable in the area of agri-biotechnology and other bio-services, such as bio-energy, bio-fertilizer, bio-control.
- Basic supporting courses are being offered by the College of Basic Sciences & Humanities.
- The academic calendar including examination dates for both semesters was approved by Academic Council in the beginning of the session and according session was run through out the year.
- The implementation of examination reforms issued by the office of the Registrar around the year was done.
- A good number of students have qualified the research entry level examination conducted by various apex bodies. (CSIR-JRF: 21; CSIR-NET: 07; DBT- JRF: 07; GATE: 21; CSIR-UGC: 3; ASRB-NET: 4)
- The capacity building and development of the faculty was satisfactory. The faculty also delivered a number of lectures invited in various research and academic programmes. They publish Bulletins and Lab-manuals.
- There were 17 projects and running smoothly by principal investigators. One project was completed during the year.
- Three national seminars conducted and one patent was bagged.
- The faculty members of the college published a number of research papers in national and international journals to maintain high citation index and impact factor.
- Seven to eight staff members received the national level awards.
- Library services were improved as 9349 number of documents procured and 448 periodicals procured during the year.
- All the admissions were done smoothly as per defined procedure. Examinations were completed well in time.
- The technological upgrade with state-of-the-art done in laboratories.
- The scholarships were distributed as per norm of the apex agencies and University fellowships were also given to doctoral scholars as per University norms.
- Zero-zone was maintained for anti-ragging.
- Fifteen students were placed through College Placement Cell. The net outcome is satisfactory.

Section D

Plans of the Institution for the year 2009-10

- To update the curricula of the courses offered to students in various degree programmes with innovations in curricular design and transaction
- To formulate a New Programme in Humanities as suggested by NAAC and cater the needs of the Inter-disciplinary and New programmes to be started by other departments
- To ensure that reforms have been implemented in the examination as per guidelines given time-to-time by the Registrar
- Establishment of SC/ST Cell for implementation of Government policies and roster as per guidelines and their Monitoring and to review RTI cases at college level
- To emphasizing on capacity building for new entrants as well as Focus on Faculty Trainings and Competence Improvement
- Organizing national and international seminars and workshop as well as trainings to increase the potential in feasible skill development
- To maintain the deals recorded in MoUs, projects, collaborative research
- To emphasize young staff for new research projects
- To upgrade the class rooms for Computer Aided Teaching (CAT)
- Periodically reviews of the Internal Quality Assurance and finally in the end of the year
- Improvement as per Feedback from the students regarding the instruction imparted during each semester
- To update of the records related to complaints and redressal
- To ensure that college is a non-smoking and zero ragging zones.



(Manoj Kumar)
Coordinator, IQAC

Annexure -I

Capacity Building and Faculty Development programmes

Presentation/Invited Lectures in seminar/conference etc.

National level

1. A. Dubey, B.R. Singh Shishir Tandon and A.K. Verma (2009) Effect of Apple Pomace in White Flour Biscuit Making Properties: A Mixographic Analysis *National Conference on Engineering for Food & Bio-Processing* (February 27-March1, 2009) at Post Harvest Process & Food Engineering, College of Technology, Pantnagar
2. Alok Satlewal, MGH Zaidi and Reeta Goel (2008). Application of indigenously developed bacterial consortia in biodegradation of polyethylene. *Seminar on Application of microbiology for human welfare*, BFIT College, Dehradun.
3. Anil Kumar (2009) a) Small Millets: From Nutri-genomics to Nutraceuticals development. b) Varietal identification and determination of hybridity in crop plants In Compendium of *ICAR sponsored winter school on Integration of molecular and classical techniques of plant breeding for enhancing crop productivity*, G. B. Pant University of Agriculture & Technology, Pantnagar, pp 63-65 & 56-62.
4. Anil Kumar, Soma S. Marla, Dinesh Pandey and B.R.K. Gupta (2008) Nano-bio-information technology: The Horizon of a New Concept in Life Science Research. In Proceeding of *XIV Annual Convention of Indian Society of Veterinary Immunology and Biotechnology*, Feb 27-29, 2008,
5. Anita Sharma and Hemlata Chauhan (2008). Role of endophytic diazotrophic and rhizospheric microbes in sugarcane nutrition. In Proceedings of *National Seminar on Varietal Planning for improving productivity and sugar recovery in sugarcane* 78-81.
6. Anu and Manvika Sahgal (2008). "Characterization of enzyme producing bacteria recovered from intestine of Rohu (*Labeo rohita*)."
International Symposium on Microbial Biotechnology: Diversity, Genomics and Metagenomics during 49th Annual AMI Conference Nov 18-20, 2008 University of Delhi, INDIA. P71.
7. Ashish Kumar, Rashmi Srivastava, Mamta Joshi and A.K. Sharma (2008) Evaluation of functional and genetic diversity in *Trichoderma harzianum* and genetic manipulation for better stress tolerant and biocontrol properties. *National Symposium on Advances in Microbial Diversity and Disease Management for Sustainable crop production* Ranichauri, Tehri, 13 – 15 October, 2008.
8. Ashutosh Dubey, B.R. Singh, Shishir Tandon and A. K. Tandon (2009). "Effect of apple pomace on white flour biscuit making properties: A mixographic analysis". *National conference on engineering for food and bioprocessing* Feb 27-Mar 1, 2009, Dept of P.H. P. and F. E., G.B.P.U.A.&T., Pantnagar, India.
9. B. Mohan Kumar, 'Dynamics of Origin, Preferences, Capital & Power Relations between/within Classes: Pierre Bourdieu's Analysis of Stratification' in the Proceedings of *34th All India Sociological Conference*, Rajasthan University, Jaipur, Dec 27-29, 2008
10. B. N. Mahto, 'Changes & Challenges in the Socio-economic Conditions of SCs in Uttarakhand' *34th All India Sociological Conference*, Rajasthan University, Jaipur, Dec 27-29, 2008
11. B. N. Mahto, 'Panchayati Raj System & Rural Development' in *National Seminar on Challenges to Indian society & solutions to development*, Kumaun University, Nainital, March 10-11, 2008

12. B. N. Mahto, 'Slums and Urban Environment' in the Proceeding of *National Seminar on Population, environment and development of Uttarakhand*, Dehradun, March 17-19, 2008
13. B.M. Ram, Sandeep Arora, P.K. Joshi, S.C. Saxena, Deepesh Bhatt and A.K. Gupta. 2008. Cloning and In Silico characterization of a cold shock domain protein gene from *Eleusine coracana*. *3rd Uttarakhand Science & Technology Congress*. pp 66.
14. Banerjee, T. and Srivastava, R.K., 2008. Determination of ambient air quality in SIDCUL IIE-Pantnagar using API & EF model. *3rd Uttarakhand State Science & Technology Congress* (10-11 Nov., 2008), IIT Roorkee, Uttarakhand.
15. Bharti, Mahesh, Sharma, A.K., and Rakesh, Mall (2008). Effect of Trichoderma strains in growth behavior of tomato plants. *3rd Uttarakhand State Science and Technology Congress* Nov 10-11, 2008. Roorkee, Uttarakhand
16. Bhatt A, Bisht S and Guru SK. 2008. Role of carbohydrates and protein content post-harvest life of *Gladionus*. *Golden Jubilee Conference on Challenges and Emerging strategies for improving Plant Productivity*, IARI, New Delhi, Nov. 2-14.2008. 04-22, P 267.
17. Bisht S, Batt A and Guru SK. 2008. Competitive ability of rice cultivars against weeds: Role of growth physiology and phenolic allelopathy. *Golden Jubilee Conference on Challenges and emerging strategies for improving Plant Productivity*. IARI, New Delhi, Nov. 12-14. 2008. 04 – 59, P. 180
18. Dinesh Yadav, Hariom Kushwaha, Nidhi Gupta, Vinay Kumar Singh and Anil Kumar (2008) Molecular cloning and in silico characterization of PBF Dof transcription factor in finger millet (*Eleusine coracana* (L) Gaertn). *3rd Uttarakhand State Science and Technology Congress*, 10-11th November, 2008, IIT Roorkee
19. Govind S. Kushwaha, Asstt Professor participated and presented a paper on "Role of povety and social stress on mental health" in a National Seminar on 'Mental Health and Current Scenario' at Gurukul Vishvavidyalay, Haridwar on 20-21 March, 2009.
20. J.P.N. Rai participated and presented paper in *workshop on Carbon Sequestration & Biodiversity role* at NBRI, Lucknow during 25-27 Feb. 2008.
21. J.P.N.Rai participated in *national seminar on Organic Farming for Safe Environment* organised by ICAR during 16-18 December 2008.
22. Kamla Pandey, J.P.Singh, R.C.Srivastava, H.M.Agrawal Effect of zinc content on structural properties $Ni_{1-x}Fe_2O_4$, *DAE Solid State Physics Symposium*, Dec. 16-20, 2008 BARC, Mumbai.
23. Uma Melkania and R.K.Srivastava. 2008. Industrial Noise pollution and its effect on nearby environment. *Proceedings of 5TH National Symposium on Environment Pollution and Its effect on Agricultural Production and Human Health* IAUA organized by Allahabad Agricultural Institute, Allahabad pp 100-105.
24. Govind Kumar, Manvika Sahgal amd Anupama Singh (2009). Screening of indigenous yeast isolates for production of ethanol from apple pomace. In *Proceedings of National Conference on Engineering for Food and Bio-Processing*", 27Feb-1 March, 2009. College of Technology, Pantnagar. P176-179.
25. Gupta, Sheetanshu, Rakesh, Mall, and Sharma, A. K. (2008). Glomaln-glycoprotein from AMF might play a role in controlling soil borne plant pathogen 2008. *Proceeding of IPS-MEZ Annual meeting and National Symposium on Advance in Microbial diversity and disease management for sustainable crop production*. 13-15 Oct. 2008. College of Forestry and Hill Agriculture, GBPUA&T, Hill Campus Rani Chauri, Tehri Garwal, Uttarakhand.
26. Hemlata Chauhan, Sunita, Ritesh Kumar and Anita Sharma (2008). Characterization and Potentiality of endophytes isolated from sugarcane. *Proceedings of National*

- Seminar on Varietal Planning for improving productivity and sugar recovery in sugarcane* 249-250.
27. J.P.Singh, R.C.Srivastava, H.M.Agrawal, Ravi Kumar, Amita Tripathi and R.P.Tripathi, Magnetic properties of nanostructured zinc ferrite irradiated by 100 MeV O^{+7} , *Conf. on Nanomaterials* Jan, 3-6, 2009, Cochin Univ. of Science and Technology, Kochi.
 28. Jitendra K. Saini, Arti and Lakshmi Tewari, (2008). Selection of efficient culture medium for isolation & screening of cellulolytic bacteria, *Proceedings of 49th Annual Conference, International Symposium on Microbial Biotechnology: Diversity, genomics & metagenomics* Nov. 18-20, 2008. University of Delhi, India, pp: 239-240.
 29. J.P.Singh, R.C. Srivastava, H.M.Agrawal, Prem Chand and Ravi Kumar Magnetic resonance in zinc ferrite nano particles irradiated by 100 MeV O^{+7} beam, ,” *DAE Solid State Physics Symposium*, Dec. 16-20, 2008 Mumbai.
 30. Mamta Joshi, Abdul Khalid, Rashmi Srivastava, Ashish Kumar, Anil Prakash and Anil Kumar Sharma (2008) Management of Fusarial wilt using antagonistic Fusaria. National Symposium on *Advances in Microbial Diversity and Disease Management for Sustainable crop production* held at Ranichauri, Tehri, UK from 13 – 15 October, 2008.
 31. Mehra N, Kaur D and Guru SK. 2008. In vitro multiple shoot production in Rauwolfia serpentina-An endangered medicinal plant. *Golden Jubilee Conference on Challenges and emerging strategies for improving Plant Productivity*, IARI, New Delhi, Nov. 12-14. 2008. 05-08, P 198.
 32. Neha Pandey, C.P. Singh & Surendra Kumar. Study on Labelling of Rapeseed Mustard Plants by ^{32}P Radiotracer. *Nuclear and Radiochemistry Symposium (NUCAR-2009)* w.e.f. January 7-10, 2009 at SVKM’S Mithibai College, Vile Parle, Mumbai
 33. Nidhi Gupta, A. K. Verma, Ashutosh Dubey and Lakshmi Tewari (2009), “Comparative evaluation of microbial isolates of Phoenix dactylifera for alcohol tolerance and bioethanol production from sugarcane juice” *National conference on engineering for food and bioprocessing* Feb 27-Mar1, 2009 Dept. of PHP and F.E., G.B.P.U.A.&T., Pantnagar, India.
 34. Pallavi Shah, Lakshmi Tiwari¹, A. K. Gaur² and A. K. Verma (2008). Cellobiose Hydrolyzing B-Glucosidase Producing Microorganism Isolated From Bagasse *3rd Uttarakhand State Science Congress* Nov, 9-10, 2008 Roorkee.
 35. Pandey, A., Banerjee, T. and Srivastava, R.K., 2008. Determination of ground water quality in surrounding of SIDCUL-IIIE, Pantnagar. Presented in *3rd Uttarakhand State Science & Technology Congress* (10-11 Nov., 2008), Roorkee, Uttarakhand.
 36. Pandey, H., Omre, P.K., Verma, A.K., Sahgal, M., and Singh, A., (2008). HACCP approach for Jaggery Industry, *3rd Uttarakhand State Science Congress* Nov, 9-10, 2008 Roorkee.
 37. Preeti Chaturvedi and B.D. Vashistha (2008). Effect of some phytohormones on the growth and morphogenesis of *Brachymenium bryoides* Hook. Ex Schwaegr. *Proceedings of National Acad. of Sci Biological Sciences* (In press)
 38. Rachna, Sandeep Arora. 2008. Antioxidant defense system of two Finger millet varieties differing in drought tolerance. *3rd Uttarakhand Science & Technology Congress*. pp 73.
 39. Rakesh Mall, Beniwal, Rashmi, Gupta, A. K., and Arora, Sandeep Arora (2008). Response of Different Eleusine Coraona varieties for drought stress tolerance. *Proceeding of 3rd Uttarakhand State Science and Technology Congress* Nov 10-11, 2008. Roorkee, Uttarakhand

40. Rakesh Mall, Rashmi Beniwal, A. K. Gupta, Sandeep Arora. 2008. Response of different Eleusine coracana varieties for drought stress tolerance. 3rd Uttarakhand Science & Technology Congress. pp 77.
41. S.C. Saxena, Pankaj K. Joshi, Sandeep Arora. 2008. Over-Expression of Arabidopsis apx1 gene in Brassica juncea for salinity stress tolerance. *3rd Uttarakhand Science & Technology Congress*. pp 56.
42. S.C. Shankhdhar attended a 21 days training program on 'Recombinant DNA Techniques' at IARI, New Delhi from 16th Aug. to 5th Sept. 2008.
43. Santanu Mukherjee, Anjana Srivastava and Surendra Kumar "Radiation hazard evaluation of soil and water samples around Century Paper Mill (Lalkuan) contaminated with fly ash" in MMSETLSA-2009. *Meghnath Saha Memorial Symposium on Emerging Trends of Lasers and Spectroscopy Applications* w.e.f. March 22-24, 2009 at Physics Department, Allahabad University, Allahabad.
44. Shefali Dobhal, Ajay Singh, Dinesh Chandra Pandey, Anil Kumar and Sanjeev Agrawal, Regeneration studies on Nicotiana tabacum Var Xanthi (Turkish). Normal and scFv transformed plant. *National Seminar on Physiological and Biotechnological approaches to improve plant productivity*, CCSHAU, Hissar, March 15-17, 2008
45. Shefali Dobhal, V. K. Chaudhary, Anil Kumar, Dinesh Chandra Pandey and Sanjeev Agrawal. Cytosolic expression of single chain variable fragment (scFv) against p24, core protein of HIV in plants (Nicotiana tabacum), *3rd Uttarakhand State Science and Technology Congress*, IIT Roorkee, Nov 10-11, 2008 Poster 25
46. Shefali Dobhal, Vinay Singh, Ajay Singh, V. K. Chaudhary, and Sanjeev Agrawal. In silico determination of structural and comparative modeling of single chain variable fragment against p24, a core protein of HIV. *49th AMI*, DUSC, Delhi Nov 18-20, 2008.
47. Soma S. Marla and Anil Kumar (2008) In-silico metabolic pathway analysis of pathogenic microbial genomes. Proceedings of 11th Workshop on *Medical informatics & CME on Biomedical Communication*, J B Tropical Disease Research Centre, Mahatma Gandhi Institute of Medical Sciences, Sevagram (Wardha), pp. 22-27.
48. Singh G, Pandey C.S and Guru SK. 2008. In vitro propagation and alkaloid profiling of Rauwolfia serpentina – An endangered medicinal shrub. *National Seminar on Commercial Exploitation of Medicinal and Aromatic Plants for Health and Sustenance*. Orissa University of Agriculture and Technology, Bhubaneswar, 9-10 February, 2008. Pp.132-133.
49. Singh, V. 2008. Technological Imperatives for Sustainable Mountain Agriculture: A Perspective on Marginality and Fragility-ridden Agro-ecosystem Management. In Kumar, Akhilesh, Singh, T.P. (eds.) *Appropriate Technology for Hills* (ATH-2008): Proceedings of National workshop, Pantnagar, 16-18 October 2008.
50. Sonu Ambwani, Ambwani T. and Chauhan R.S. (2008). Evaluation of Oxidative stress, Immunosuppressive effects and apoptosis of captan employing in vitro cell culture system of avian lymphocytes. *International symposium on Food Safety, Quality Assurance and Global Trade: Concerns and Strategies* and VII annual conference of Indian association of veterinary public health specialists jointly organized by College of Veterinary and Animal Sciences, Gobind Ballav Pant University of Agriculture and Technology, India and College of Veterinary Medicine, Michigan State University, USA held on November 7- 9, 2008, Abstract page, 158 – 159.
51. Sonu Ambwani, Ambwani T. and Chauhan R.S. (2008). In vitro model system for evaluation of Immunosuppression, Oxidative stress and Apoptosis in avian

- lymphocytes due to low level dose exposure of Allethrin. Uttarakhand State Science and Technology Congress at IIT, Roorkee, India held on November 10 – 11, 2008, Abstract page, 268.
52. Srivastava R. K. (2008). Systematic Approach for using EIA as a Planning Tool in Construction Projects. (Delivered as Guest of Honour lecture on 2days National Workshop-cum-Conference on “Green buildings: striding towards environmental protection and clearance”, Organized in New Delhi by SEARCH Foundation in association with MOEF, New Delhi on 18th and 19th April, 2008.
 53. Srivastava R.K. (2009). A Guest Lecture on “An Introduction to EIA studies- Need, Significance, Basic requirements & Methodology” in a training on “Infrastructural Development & its Impact on Environment’ on 5th Feb., 2009, Organized by Department of Civil Engineering, College of Technology, GBPUA&T, Pantnagar.
 54. J.P.Singh, R.C.Srivastava, H.M.Agrawal, Amita Tripathi, R.P. Tripathi (2008) Study of magnetic properties of Nanostructured Zinc ferrite, ISMC
 55. Gagan Dixit, J.P.Singh, R.C.Srivastava, H.M.Agrawal (2008) Study of nickel ferrite thin films grown by pld, ISMC
 56. Surendra Kumar, Bali Ram 2009 Study on the Effect of X-Ray Irradiations on Wheat (*Triticum aestivum* L.) Seeds and Zinc Ion Uptake by Plants in Nuclear and Radiochemistry Symposium January 7-10, at SVKM’S Mithibai College, Mumbai
 57. Surendra Kumar, Bali Ram and R.S. Tyagi 2009 Adsorption Study of Fe³⁺ Ions on Fly Ash from Aqueous Solution Using ⁵⁹Fe-Radiotracer in Nuclear and Radiochemistry Symposium January 7-10 at SVKM’S Mithibai College, Mumbai
 58. Surendra Kumar, Bali Ram, R.S. Tyagi and R.Acharya 2009 Multi Elemental Study of Fly Ash Collected From Century Paper Mills Lalkuan by N.A.A. in National Conference on Recent Advances in Waste Management at Institute of Technology, Banaras Hindu University, Varanasi
 59. Gokuland, R. Kumar and M. Kumar Thermal expansion of nanocrystalline material, , DST-2009, S.V. College, Aligarh.
 60. Vikram Singh, Shefali Dobhal, Piyush Kumar and Sanjeev Agrawal, studies on thermostable, alkali philic xylanase from different bacterial strains 3rd Uttarakhand State Science and Technology Congress, IIT Roorkee, Nov 10-11, 2008 Poster 27.

International Level

1. Anju Rani and Reeta Goel (2008). Effect of acidophilic cadmium resistant *Pseudomonas putida* 62BN strain on soybean (*Glycine max*) growth in presence of cadmium. In *International Conference on Environmental Science and Technology* (ICEST 2008), Houston Texas, USA
2. Banerjee, T., Srivastava, R.K. and Melkania, U., 2008. Floral distribution pattern in surroundings of SIDCUL IIE-Pantnagar. *International Conference on Biodiversity, Environment and Sustainability: Challenges for Future*, University of Delhi, Delhi.
3. Charu Lata, Javed Ahmad, Murray Grant and Gohar Taj (2009) Exploring the role of transcription factor jin 1 during the pathogenesis of *Alternaria* Blight in Brassica at *International Conference on Current trends in biotechnology and implications in agriculture*, 19th -21stfeb. 2009. Sardar Vallabh Bhai University of Agriculture & Technology, Meerut
4. D. Yadav, H. Kushwaha, N. Gupta, R. Yadav, V.K. Yadav, P.K. Pandey and A Kumar (2008) Elucidating the role of DOF (DNA binding with one finger) transcription factor in seed storage protein accumulation and nitrogen metabolism in finger millet at *International Congress on Bioprocesses in Food Industries & V BRSI*

- Convention of the Biotech Research Society*, 6-8th November, 2008, Osmania University, Hyderabad.
5. Dalveer Kaur, Mehra, Nirmala, Shukla, Alok, 2008. In vitro development of low phosphate tolerant lines in rice (*Oryza sativa* L.) *International conference on Molecular Biology* Jan. 5-7, 2008, JNU, N. Delhi.
 6. Dinesh Yadav, Hariom Kushwaha, Vinay Kumar Singh, Nidhi Gupta and Anil Kumar (2008) In silico identification of putative Cis-regulatory elements in Cloned Dof genes of cereals *International Conference on Molecular Biology and Biotechnology*, 19-21 Oct. 2008, Dept of Bioscience and Biotechnology, Banasthali University, Rajasthan.
 7. Gagan Dixit, J.P.Singh, R.C.Srivastava and H.M.Agrawal Effect of thickness on magnetic properties of nickel ferrite thin films, *International symposium for Research Scholars on Metallurgy, Materials Sci. and Engg.* Dec. 10-12, 2008 IIT Madras.
 8. J.P.Singh, Gagan Dixit, R.C.Srivastava and H.M.Agrawal Raman spectroscopic Investigations on Nanostructured zinc ferrite, *International symposium for Research scholar on Metallurgy, Materials Sci. and Engg.*, Dec. 10-12, 2008, IIT Madras.
 9. Joshi M., Bisht, S., Bhatt, A. and Srivastava R. K. (2008). Climate change on forest health (susceptibility to pest & diseases). *International workshop on climate change & its impact on flora in the South Asia region*. 9-12th March, 2008, NBRI, Lucknow.
 10. Kamla Pandey, Jitendra Pal Singh, R.C.Srivastava and H.M.Agrawal Structural and fourier transformer infrared (FTIR) studies of nanostructured $Ni_{1-x}Zn_xFe_2O_4$, “, *Int. Conf. on transport and optical properties of Nanomaterials* Jan. 5-8, 2009, Allahabad University, Allahabad.
 11. Kapri, A. Zaidi, MGH and Goel R. (2008). Nanoparticle-Supplementation: An approach to Accelerate Plastic Biodegradation. *International Symposium on Microbial Biotechnology Diversity, Genomics and Metagenomics* (AMI 2008).
 12. Kapri, A. Zaidi, MGH and Goel R. (2009). Nanobarium titanate as supplement to accelerate plastic waste biodegradation by indigenous bacterial consortia. *International Conference on Transport and Optical Properties of Nanomaterials*, 2009.
 12. Manoj Nath, Netrapal Sharma, V. K. Singh, Dinesh Yadav and Anil Kumar (2009) Molecular cloning of allelic variants of calmodulin- like proteins from finger millet genotype differing in grain colour, protein and calcium content, at *International Conference on Current trends in biotechnology and implications in agriculture*, 19th - 21stfeb. 2009. Sardar Vallabh Bhai University of Agriculture & Technology, Meerut
 13. Manoj Nath, V. K. Singh, Soma Marla and Anil Kumar (2009) In silico promoter analysis of the upstream sequences of Rice EF-hand containing protein genes: A tool to identify seed specific calcium binding protein genes in finger millet, based on homology and PCR based cloning, at *International Conference on Current trends in biotechnology and implications in agriculture*, 19th -21stfeb. 2009. Sardar Vallabh Bhai University of Agriculture & Technology, Meerut
 14. Manoj Singh, Atul K. Gupta, Sonu Ambwani and Anil Kumar (2009), Development of high titre antibodies against teliosporic antigens of Karnal bunt for developing a immunodiagnostic assay system for quarantine regulations, at *International Conference on Current trends in biotechnology and implications in agriculture*, 19th - 21stfeb. 2009. Sardar Vallabh Bhai University of Agriculture & Technology, Meerut
 15. Manoj Singh, Deepti Bhogal, Sneh Narwal, and Anil Kumar (2008), A decision to trigger defense or susceptibility based on induction of cysteine proteases and cystatins during fungal pathogenesis of *Alternaria solani* in tomato, at *International Conference*

- on *Molecular Biology and Biotechnology*, 19th -21st Oct. 2008, Department of Bioscience and Biotechnology, Banasthali University, Rajasthan.
16. Mehra N, Kaur D and Guru SK 2008. Leaf callus cultures of *Rauwolfia tetraphylla*: A potent source of anti-hypertension drugs. *Second International conference on Trends in cellular and molecular biology*, Jawaharlal Nehru University, New Delhi, India, 5-7 January, Pp.85.
 17. Negi, H. Zaidi, MGH, Kapri, A, Satelwal, A. and Goel, R. (2008). Comparative in vitro Biodegradation Study of Epoxy Silicone Blend by Two Selected Bacterial Consortia. *International Symposium on Microbial Biotechnology Diversity, Genomics and Metagenomics (AMI 2008)*.
 18. Nidhi Gupta, Hariom Kushwaha, Rashmi Yadav¹, Dinesh Yadav and Anil Kumar (2009) Understanding the differential regulation of enzymes involved in nitrogen uptake and assimilation in Finger Millet genotypes, at *International Conference on Current trends in biotechnology and implications in agriculture*, 19th -21stfeb. 2009. Sardar Vallabh Bhai University of Agriculture & Technology, Meerut
 19. P. Kumar, V. Singh and S. Agrawal. Screening of bacteria isolated from different rhizospheric regions of Uttarakhand for acidophilic phytase. *International symposium on food safety, quality assurance & global trade: Concerns and strategies VIIIth Annual Conference of Vet. Public Health. G.B.P.U.A.&T., Pantnagar, Nov 7-9, 2008*, p243. page 138.
 20. Pallavi Shah, Lakshmi Tewari, AK Gaur and Ashok Verma (2008). 16S r-DNA based identification of microorganisms for maintaining the hygiene in stored jaggery. Proceedings of *International Symposium on Food safety, quality assurance and global trade: Concerns and strategies*. GBPUAT, Pantnagar, Nov 7-9, 2008, pp: 152-153.
 21. Pallavi Shah, Lakshmi Tiwari¹, A. K. Gaur² and A. K. Verma (2008). 16S rDNA based identification of microorganisms for maintaining the hygiene in stored jaggery. *International symposium on Food Safety, Quality Assurance & Global Trade: Concerns and Strategies* in collaboration with Michigan State University, USA on occasion of VIIIth Conference of Vet Public Health Nov 07-09, 2008. G.B.P.U.A.&T Pantnagar, India P316.
 22. Pandey, H., Omre, P.K., Verma, A.K., Sahgal, M., Kunsbhar, B.K. and Singh, A. (2008). Food Safety, Quality standard and Regulations. *International symposium on Food Safety, Quality Assurance & Global Trade: Concerns and Strategies* in collaboration with Michigan State University, USA on occasion of VIIIth Public Health Specialists Nov 07-09, 2008. G.B.P.U.A. & T., Pantnagar, India P69.
 23. Preety Panwar, Anand Kumar Jha, P.K. Pandey, Dinesh Yadav and Anil Kumar (2009) Allele mining for blast resistance based on NBS-LRR resistance gene homologs in finger millet (*Eleusine coracana*) at *International Conference on Current trends in biotechnology and implications in agriculture*, 19th -21stfeb. 2009. S V B University of Agriculture & Technology, Meerut
 24. Preety Panwar, R. K. Saini, Netrapal Sharma, Dinesh Yadav and Anil Kumar (2009) Genetic Diversity and relationships among Finger Millets (*Eleusine coracana*) genotypes/accessions using random amplified polymorphic DNA and rapidly evolving sequences of Cytochrome P450 based PCR analysis at *International Conference on Current trends in biotechnology and implications in agriculture*, 19th -21st Feb. S V B University of Agriculture & Technology, Meerut
 25. Shalini Bhutani, Vinay Singh, Dinesh Pandey, Soma S. Marla and Anil Kumar (2008) Comparative studies on mitochondrial genome annotation of *Tilletia indica* with *Ustilago maydis*. *International Conference on Molecular Biology and Biotechnology*,

- 19th -21st Oct. 2008, Department of Bioscience and Biotechnology, Banasthali University, Rajasthan.
26. Shubha Rai, Vinay K. Singh & Sandeep Arora (2008) Identification of Cold Shock Protein Homologue in higher plants at 2nd International Conference on *Trends in cellular and Molecular Biology* 5th – 7th January, 2008 at JNU, New Delhi. P. 88.
 27. Singh G, Bhatt A and Guru SK. 2008. Effect of elicitors, precursor feeding on production of terpene indole alkaloids (TIAs) in culture of *Rauwolfia Serpentina*. Second *International conference on Trends in cellular and molecular biology*, Jawaharlal Nehru University, New Delhi, India, 5-7 January, 2008. Pp.100.
 28. V. K. Singh, A. Kumar and S. Marla (2009) Genome-wide comparative phylogenetic analysis of Rice and Arabidopsis Lipoxygenase gene families. at *International Conference on Current trends in biotechnology and implications in agriculture*, 19-21 Feb. 2009. Sardar Vallabh Bhai University of Agriculture & Technology, Meerut
 29. V. K. Singh, V. S. Gaur, A. Kumar, U.S. Singh and S. Marla (2008) Identification, Isolation and Molecular Characterization of the LOX 1 Gene Homolog from Rice, *Oryza sativa* L. subsp. Indica var. Pusa Basmati-1 at *International Conference on Molecular Biology and Biotechnology*, 19th -21st Oct. 2008, Department of Bioscience and Biotechnology, Banasthali University, Rajasthan.

Participation in Trainings etc.

1. Pushpa Lohni UGC sponsored workshop on ‘Capacity Building of Women managers in Higher Education’ from 1-5 Dec. 2008
2. Pushpa Lohni 10 days (2-1-09 to 11-1-09) training on ‘Cloning and Expression Techniques’ at NIPGR
3. Dinesh Yadav Attended 13th Human Genome Meeting (HGN-2008)” Genomics and the future of medicine” held at HICC, Hyderabad from 27th -30th Sept. 2008.
4. Dinesh Yadav attended the International Congress on Bioprocesses in Food Industries (ICBF-2008) & 5th Convention of the Biotech research Society (BRSI), India held at Osmania University, Hyderabad from 6th -9th Nov. 2008.
5. Dinesh Yadav attended the 3rd Uttarakhand State Science & Technology Congress held at IIT, Roorkee from 10th -11th Nov. 2008.
6. Dr S.K.Guru (J.R.O), Plant Physiology attended following training programmes/short courses in the University
 - Auto-CAD Essential and 3D modeling and Autodesk Inventor September 22-24 2008
 - Water conservation and Utilization for Improving Agriculture Nov. 5-25, 2008
 - Relevance of ICT in Education Dec. 2-8, 2008
 - Cyber Security Management Dec. 18-28, 2008
 - Management of Agricultural Knowledge and Information system for Farmers Dec.30, 2008 –Jan. 08,2009
 - IT based Decision Support System for Rural Livelihood assessment. Feb. 2-11, 2009
7. Dr. Govind S. Kushwaha, Asstt. Professor (Psychology), Socil Sc. & Hum. in “Infrastructural development & its impact on environment” by Civil Engg. Dept, Feb. 2-7, 2009 Also in “ICT tools & Techniques for effective teaching & learning” by the Dept of Computer Engg, 24-28 Feb, 2009
8. Dr. B. N. Mahto, Asstt. Professor (Sociology), Social Sc. & Hum in “ICT Tools & Techniques for effective teaching & learning” by the Dept of Computer Engg, 24-28 Feb, 2009

9. Dr Prabha Pant, Asstt. Professor (English) in a 21-Day Orientation Course programme at Academic Staff College, K U, Nainital

Invited Lectures

1. Alok Shukla delivered invited lectures on Transgenic development at Forest Research Institute Dehradun in August 2008.
2. B. Mohan Kumar, delivered lectures on “Indian Philosophy of Education” and “Emerging challenges and contemporary issues in education” on March 24 and 31, 2009 in the ICAR sponsored *Summer School on Emerging technologies of communication and education for management of learning*, 18 March-7 April, 2009 College of Agriculture, GBPUA&T
3. B. Mohan Kumar co-chaired a session and presented paper on ‘Globalization in India: Essence, Lessons & Challenges’ in the *National Seminar on Globalization and Change* at BHU, Varanasi, March 7-8, 2008
4. B. Mohan Kumar chaired a session and presented paper on ‘Globalization, Social Security and Impacts: A New Development Paradigm’ in the *National Seminar on Challenges of Indian Society and Solutions to Development*, Kumaun University, Nainital, March 10-11, 2008
5. B. Saini delivered lectures on “Reflective Teaching” and “Microteaching Lab” (as observer), on March 26 & 27, 2009 in the ICAR sponsored *Summer School on Emerging technologies of communication and education for management of learning*, 18 March-7 April, 2009 College of Agriculture, GBPUA&T
6. Uma Melkania chaired a session, participated, and presented a paper in the *National Conference of The Indian Society of Geomatics 2009* organized by Uttarakhand State Application Centre held from February 4-6, 2009, at FRI, Dehradun
7. Uma Melkania co-chaired a session, participated and presented a paper in *National symposium on Environment Pollution and Its effect on Agricultural Production and Human Health* organized by Allahabad Agricultural Institute, Deemed University, Allahabad 25-26 September 2008.
8. Anil Kumar and B.R.K. Gupta (2008) Quality education in agricultural biotechnology and nano-bio-information technology for industrial growth and development. In Backgrounder for *ASSOCHAM 4th International Education Fair cum Seminar* organized by College of Agribusiness Management, GB Pant University of Agriculture & Technology, Pantnagar, May 17-18, 2008.

Lab Manuals/Bulletins

1. Anil Kumar & Dinesh Pandey (Ed.) *Techniques in Molecular Biology* University Publication, 2008
2. Anil Kumar, J.P. Jaiswal, Manoranjan Hota and G.K. Garg (Eds) 2008 *LMOs!! GMOs!! Are They Safe: Frequently Asked Questions (FAQs) on Biotechnology & Biosafety*, both English and Hindi versions.
3. Anil Kumar, Sandeep Arora, Dinesh Yadav, Sonu Ambwani and Dinesh Pandey (Eds) 2008 *Critical Control Points in Genetically Modified Seed Production*) Hindi version.
4. Anil Kumar, Sonu Ambwani & Partha Roy (Ed.) *Techniques in Animal Cell Culture* University Publication, 2008
5. Anil Kumar, V. Umopathy & Rashmi Singh (Ed.) *Techniques in Immunology & Serology* University Publication, 2008
6. Guru S. K, Tripathi, S. S. and Singh, R. (2008). *Gajar ghas ka prakop ebam Prabandhan* (in Hindi) AICRP on Weed Control, GBPUA&T, Pantnagar.

7. Laboratory Manual for *Detection of Living Modified Organisms* (LMOs). A publication by Ministry of Environment & Forest, Govt of India

Visits by eminent scholars/dignitaries

1. During the year 2008-09 the Professor Phil Hariss, Head of International Development, Coventry University (UK) visited in July, 2008 and Dr.Philips Davis, Professor and Er. Pauls Knowles, Research Fellow, Deptt. of Mechanical Engineering, Auston University, Burmingham (UK) visited to Department of Environmental Science in month of April and October, 2008
2. Dr. Ashok Kumar, SO (H), BARC, Mumbai during 23.3.09 to 28.3.2009 visited Deptt of Physics.
3. In the Deptt of Microbiology, Dr. Jaswant Singh, Principle Scientist, & Coordinator Jaggery and Khandsari. Also Dr. Nanda, Principal Scientist and Coordinator of AICRP on Post Harvest Tech. CIPHET, Ludhiana
Several visitors came to deliver lectures or interact in the Deptt of MBGE during the year:
4. Dr. Abha Agnihotri, Fellow, Plant Biotechnology, TERI and Adjunct Faculty, TERI University
5. Dr. Ashwani Pareek, Associate Professor, Stress Physiology & Molecular Biology Laboratory, School of Life Sciences, JNU
6. Dr. B.D. Lakchaura, Director, Deo Bhoomi Institute of Technology, Lalpur-Rudrapur
7. Mr. Bhagirath Choudhary, National Coordinator, ISAAA South Asia Office, New Delhi
8. Dr. D.V. Amla, Senior Scientist, Plant Molecular Biology & Biotechnology, National Botanical research institute, Lucknow
9. Dr. G K Garg, Director R & D, Krishidhan Seeds Ltd. Jalana, Maharashtra
10. Dr. H.S. Dhaliwal, Professor, Dept. of Biotechnology, IIT, Roorkee
11. Dr. H S Gupta, Director, Vivekananda Parvatiya Krishi Anusandhan Sansthan (VPKAS),
12. Dr. K. R Koundal, Joint Director I.A.R.I., New Delhi
13. Dr. K.C. Bansal, Professor, National Research Centre on Plant Biotechnology, I.A.R.I
14. Dr. L M. S. Palni, Director, G.B. Pant Institute of Himalayan Environ. & Development, Kosi Katarmal, Almora
15. Dr. Manoj Prasad, Scientist, National Institute of Plant Genome Research, JNU Campus
16. Dr. R.D. Kapoor, Monsanto India Limited, New Delhi
17. Dr. Rajendra Dobhal, Director (UCOST), & Project Director, State Biotechnology Programme, Haldi
18. Dr. Ranjini Warriar, Additional Director, Member Secretary, GEAC, CS Division, IARI
19. Dr. Shelly Praveen, Senior Scientist (Biochemistry), Advance Centre of Plant Virology, IARI
20. Dr. TM Manjunath, Consultant (AgriBiotech), Bangalore
21. Dr. Zakwan Ahmad, Director, Defence Agriculture Research Laboratory, Pithoragarh
22. Dr. Ram Kumar, Professor, Indian Institute of Science, Bangalore
23. Dr. Subba Rao, Associate Professor, School of Biotechnology, JNU
24. Dr. Vikram S. Gill, Professor, Kansas State University, Kansas (USA)
25. Dr P.K. Gupta, Emeritus Professor, INSA, Department of Biotechnology, C.C. S. University, Meerut

Ph.D. Scholars working in various Departments in the College (2008-09)

1. Department of Biochemistry

- Piyush Kumar 30678 (2005-06)
- Ms. Manisha Negi 34253 (2006-07)
- D.C. Pathak 34255 (2006-07)
- Vikram Singh 34026 (2006-07)
- Amit Verma 35489 (2006-07)
- Ms. Rachna 32760 (2006-07)
- Ms. Aarti Barthwal 35623 (2006-07)
- Sheshanu Gupta 34127 (2006-07)
- Varun Gupta 35445 (2007-08)
- Navin Chandra Pant 28010 (2008-09)
- Ramesh Singh Pal 28002 (2008-09)
- Ms. Ruchi Agarwal 32788 (2008-09)

2. Department of Chemistry

- Ms. Nidhi Gangwar 34023 (2006-07)
- Raju 34024 (2006-07)
- Ms. Ruchi Agarwal 34258 (2006-07)
- Ms. Gunjan Bhatia 32783 (2007-08)
- Ms. Aparna Thakur 35442 (2007-08)
- Ms. Jyoti Pandey 35443 (2007-08)
- Ms. Gunjan Bisht 34120 (2008-09)
- Ms. Hem Lata Tewari 34124 (2008-09)
- Ms. Jyoti Kumari 36995 (2008-09)
- Ms. Suman Lata Pal 36980 (2008-09)

3. Department of Environmental Sciences

- Ms. Rama Pal 31808 (2006-07)
- Jaspal Singh Chauhan 31731 (2006-07)
- Ms. Shweta Saraswat 35446 (2007-08)
- Ms. Asha Pandey 35447 (2007-08)
- Ms. Anshul Fuloria 28054 (2007-08)
- Bhumija Kafalia 32766 (2007-08)
- Ms. Patibha Singh 35448 (2007-08)
- Ms. Mohini Singh 33977 (2008-09)
- Ms. Kavita Tariyal 33980 (2008-09)
- Vipin Kumar 36982 (2008-09)
- Ms. Akansha Rastogi 34002 (2008-09)

4. Department of Mathematics, Statistics & Computer Science

- Ms. Meena Kumari 29798 (2006-07)
- D.C. Singh Bisht 34029 (2006-07)
- Ziya Uddin 34249 (2006-07)
- Ms. Garima Chopra 35450 (2007-08)
- Ms. Vandana Bisht 35449 (2007-08)
- Prakash Chandra Mathpal 35451 (2007-08)
- Deepak Chandra Pandey 34100 (2008-09)
- Ms. Sangeeta Pant 36986 (2008-09)
- Ms. Nidhi Tewari 37143 (2008-09)
- Ms. Priya Saxena 36987 (2008-09)
- Navneet Joshi 36985 (2008-09)

5. Department of Microbiology

- Ms. Rubi 32932 (2005-06)
- J.K. Saini 32930 (2005-06)
- Ms. Aarti 34028 (2006-07)
- Ms. Shalini Fartyal 32750 (2007-08)
- Sachin Kumar Vaidh 35624 (2007-08)
- Ms. Himani Pandey 35445 (2007-08)
- Ms. Ruchi Tewari 32752 (2007-08)
- Ms Shubhra Singh 32816 (2007-08)
- Priyam Gupta 35625 (2007-08)
- Ms. Rekha Rawat 33969 (2008-09)
- Ms. Swati Chauhan 33989 (2008-09)
- Shahbaz Anwar 36989 (2008-09)
- Ms. Komal Agrawal 35331 (2009-10)
- Ms. Megha Pandey 35332 (2009-10)

6. Department of Molecular Biology & Genetic Engineering

- Vinod Chandra Pandey 34031 (2006-07)
- Rishendra Kumar 34259 (2006-07)
- Ms. Ritu Sah 34252 (2006-07)
- Ms. Neha Rani Tomar 31804 (2006-07)
- Ms. Deepti Bhogal 32774 (2008-09)
- Ms. Vineeta Singh 36991 (2008-09)
- Saurabh Badoni 37173 (2008-09)
- Ms. Pallavi Sah 34087 (2008-09)

7. Department of Physics

- Ms. Archana Dhyani 32931 (2005-06)
- Gokulanand 34034 (2006-07)

- Ms. Uma Devi Sharma 34250 (2006-07)
- Virendra Singh 34032 (2006-07)
- Dewakar Padaliya 34256 (2006-07)
- Ms. Geeta Rana 35457 (2007-08)
- Girish Chandra 32819 (2007-08)
- Raghuvesh Kumar 35487 (2007-08)
- Ms. Kamla Pandey 31722 (2007-08)
- Ms. Bhawana Pandey 35456 (2007-08)
- Puneet Negi 36992 (2008-09)
- Ms. Archana Bhatt 36993 (2008-09)
- Ms. Garima Bisht 37170 (2008-09)
- Hemant Kumar 37117 (2008-09)

8. Department of Plant Physiology

- R.N. Bahuguna 30696 (2005-06)
- Ms. Pratibha Singh 32927 (2005-06)
- Ms. Deepti Verma 34035 (2006-07)
- Ms. Gargi Joshi 30790 (2006-07)
- Kanak Pal 34036 (2006-07)
- Ms. Kamla Kumari Dhyani 35490 (2007-08)
- Ms. Bhawana Joshi 35629 (2007-08)
- Ms. Pawanika Chandola 35626 (2007-08)
- Hukum Singh 35459 (2007-08)
- Ms. Babita Patni 34096 (2008-09)
- Ms. Bhavna Thakur 34090 (2008-09)
- Ms. Kratika Bhandari 30659 (2008-09)
- Ms. Kiran Bharti 37141 (2008-09)
- Rahul Tyagi 37024 (2008-09)
- Ms. Rashmi Verma 39374 (2009-10)
- Ashish Sharma 34138 (2009-10)
- Ms. Neelam Dhiwan 35464 (2009-10)

Citation Index of faculty members and Impact Factor

PUBLICATIONS of FACULTY MEMBERS

Books

1. Gautam, P.L. Singh, V., and Melkania, Uma (Eds) 2008 Ecosystem Diversity and Carbon Sequestration: Climate Change Challenges and a Way Out for Ushering in a Sustainable Future, New Delhi, Daya Publishing House, New Delhi.
2. Sharma, A.K., Srivastava, Rashmi and Wahab, Seema (2009): Agriculture Diversification: Problems and Perspectives. Narosa Publishing Co, New Delhi
3. Singh, V. and R.D. Gaur. 2008. Rangeland Ecosystems in the Himalayan Mountains. New Delhi: Daya Publication. 285+xviii pp.

Research Papers in Journals

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2. A Sharma, A. Srivastava, Bali Ram and P.C. Srivastava (2008). Dissipation behaviour of Spinosad insecticidal in chilli and soil. *Asian Journal of Environment, Water and Soil Pollution* (Netherlands). 5(2) 49-52
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10. Bhatt, Richa, Mohd., Arif, Gaur, A.K., and Rao, P.B., 2008. *Rouwolfia serpentina*: Protocol optimization for in vitro propagation. *African J. of Biotechnology* 7(23): 4265-4268
11. D. Sharma, N.Bhullar, M.G.H.Zaidi, V. Agarwal, S.Alam, A.K.Rai and R.P.Pant, (2008) Synthesis of Polyvinyl Pyridine Ferrite Nanocomposites in Supercritical Carbon Dioxide, *J. Nanostructured Polymers & Nanocomposites* .
12. D.K. Singh, G. Singh, A. Srivastava and N.K. Sand. 2008. Harvest time residue of isoproturon in soil, wheat grain and straw. *Pantnagar J of Res.* 6(1) 125-127.

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19. Hema Joshi, Kailash Pandey, Bhawna Pandey, G.C. Joshi, H.M. Agrawal and Ashok Kumar (2008) Excitation Functions of $^{50,52}\text{Cr}(n,2n)$ and $^{54,56}\text{Fe}(n,2n)$ Reactions In *Proc. Nucl. Physics (India)*. Volume 53
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21. Jeewan Chandra, Deepika Kandpal and B.R.K.Gupta (2008) High pressure behaviour of MgO and CuO Nano crystals, *International J. Physics* 1,1
22. Jeewan Chandra, Deepika Kandpal and B.R.K.Gupta (2008) High temperature study of nanomaterials using integral form of equation of state (IFEOS), *High temp-High pressure (UK)*37, 325
23. Jeewan Chandra, Deepika Kandpal and B.R.K.Gupta (2009) Study of thermoelastic properties of nanomaterials under high temperature, *Physica B (Netherlands)* 404, 1087-1091
24. Jeewan Chandra, Deepika Kandpal and B.R.K.Gupta (2009) Applicability of IFEOS under high temperature. *High Temperature-High Pressure (UK)* In Press
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26. Jitendra Pal Singh, R.C.Srivastava, H.M. Agrawal and R.P.S. Kushwaha (2008) ^{57}Fe Mossbauer spectroscopy study of Nanostructured Zinc Ferrite; *Hyperfine Interaction*, 183, 221.
27. Jitendra Pal Singh, R.C.Srivastava, H.M.Agrawal, R.P.S. Kushwaha, Prem Chand and Ravi Kumar. (2008) EPR study of nanostructured zinc Ferrite; *Journal of Nanoscience* 7, 21-27.
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41. Neelam Mewari and Preeti Chatruvedi. 2008. Antifungal activity of *Plagiochasma appendiculatum* L. against certain plant pathogens *J. of Plant production and protection.* (In Press).
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59. Rani, A.; Shouche, YS. and Goel, R. 2008. Declination of copper toxicity in pigeon pea and soil system by growth promoting *proteus vulgaris* KNP3 strain. *Current Microbiol.* Vol 57(1), 78-82.
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96. Vinay Kumar Singh., Soma S. Marla, Sonu Ambwani, and Anil Kumar (2008) Development of Cry-Bt identifier (Accepted for publication In *Bioinformation*)

Annexure -IV

List of Equipments purchased/ Installed during the year

1.	Biochemistry	Dr.Sanjeev Agrawal	Alphaimager Gel Documentation with accessories	US \$ 7,695.00
2.	Biological Sci.	Dr. A.K. Sharma	sigma 1-15 high speed refrigerated microphages with LCD display screen micro processor controlled with accessories	EURO 3130.25
3.	Biological Sci.	Dr. A.K.Sharma	T-Professional thermal cycler with accessories	EURO 6050.00
4.	Biological Science	Dr. A.K. Sharma	Horizontal Deep Freezer - 86°C Model MDF U 192 with accessories	JP ¥ 6,17,388.00
5.	Biological Science	Dr. A.K. Sharma	Trinocular Research Microscope Model BX51 with accessories	JP ¥ 6,83,850.00
6.	Biological Science	Dr. A.K. Sharma	Accessories of Olympus Trinocular Microscope Model BX51	IP ¥ 22,26,150.00
7.	Biological Science	Dr. A.K. Sharma	UVNIS Double Beam Spectrophotometer Model UV-2601 with accessories	US \$ 5,605.00
8.	Chemistry	Dr. A.K. Pant	semi-prep froforma liquid chromatography system with accessories	USD 38466.00
9.	Chemistry	Dr. Anjana Srivastav	HPLC system with accessories	US \$ 18,293.00
10.	MBGE	Dr. Anil Kumar	Thermo Mixture comfort with all relevant accessories and centrifuge 5415 R, W/o roter with all relevant accessories	EURO 16,640.00
11.	MBGE	Dr. Anil Kumar	Alphaimager Gel Documentation with accessories	US \$ 7,695.00
12.	MBGE	Dr. Anil Kumar	UV Visible Spectrophotometer with accessories	US \$ 25,195.00
13.	MBGE	Dr. Anil Kumar	Fluorescent Plate Reader & Micro Plate Reader	US \$ 36,350.00
14.	Microbiology	Dr. Reeta Goel	Dcode System & Gel Doc system with accessories	US \$ 20,623.25
15.	Microbiology	Dr. Reeta Goel	Growth Chamber Incubator Model CO-14	GBP 2.141.00